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**Holland**

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(54) **MODULAR PRECAST SPA SYSTEM**

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2001, now Pat. No. 6,637,162.

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(52) **U.S. Cl.** ..... **52/169.7; 52/610; 52/730.6;**  
**52/98; 52/102; 52/79.11; 52/220.2; 52/174;**  
**4/506; 4/488; 4/493**

(58) **Field of Search** ..... **52/169.7, 610,**  
**52/730.6, 98, 102, 79.11, 220.1, 174; 4/506,**  
**488, 493**

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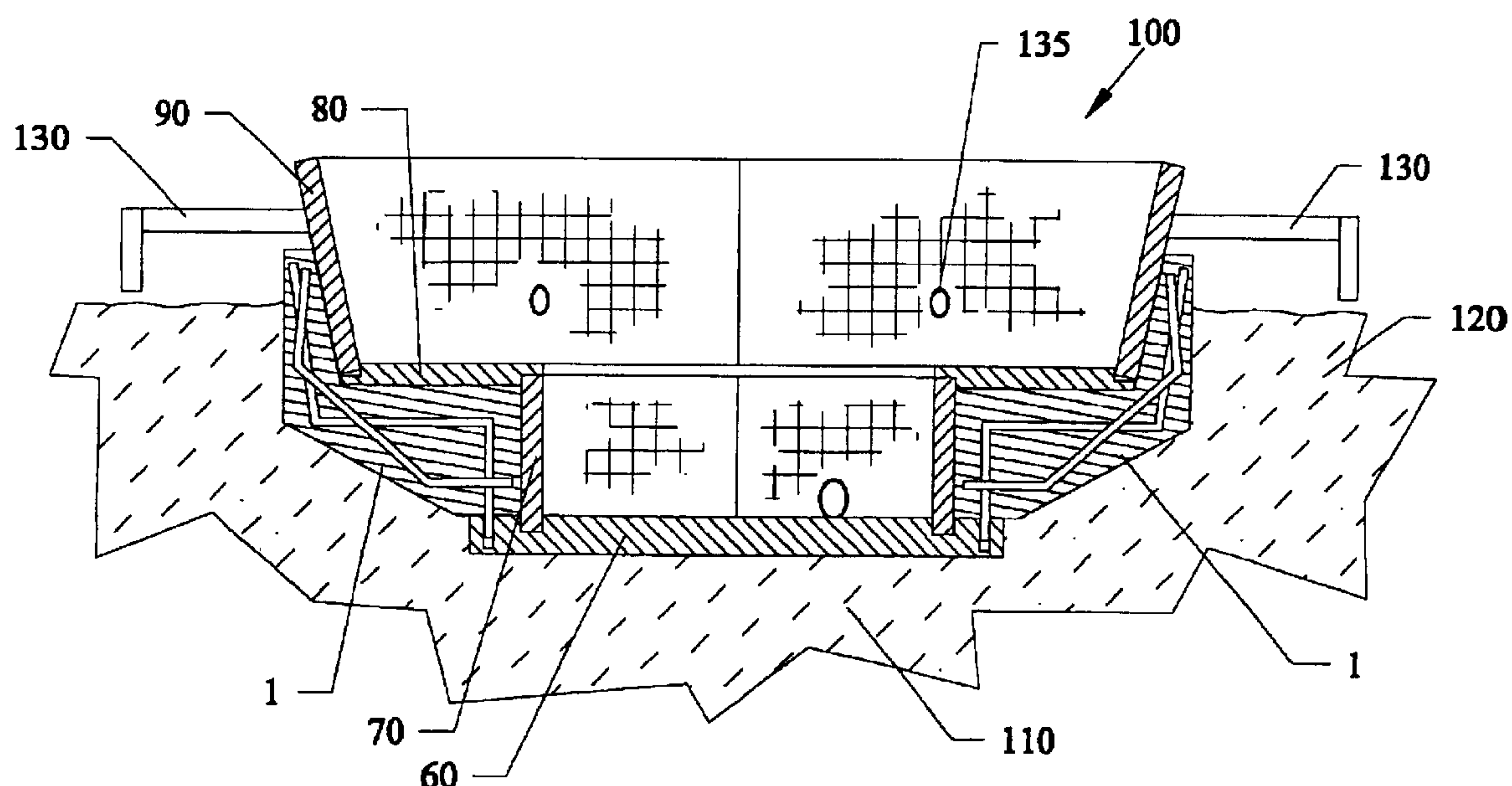
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(57) **ABSTRACT**

Forms for building and assembling water containment hold-  
ers such as but not limited to inground spas, pools, manmade  
ponds and fountains. The forms can have an L-shape with  
downwardly protruding members for allowing the forms to  
be placed about a base foundation having receiving openings  
for the protruding members. Lower walls, seats and back-  
rests can be placed about the forms to assemble the water  
containment holder. All the components including the base,  
the forms, the seats, lower walls, and backrests can be  
modular components that are easily transported and  
assembled by an individual installer.

**8 Claims, 5 Drawing Sheets**



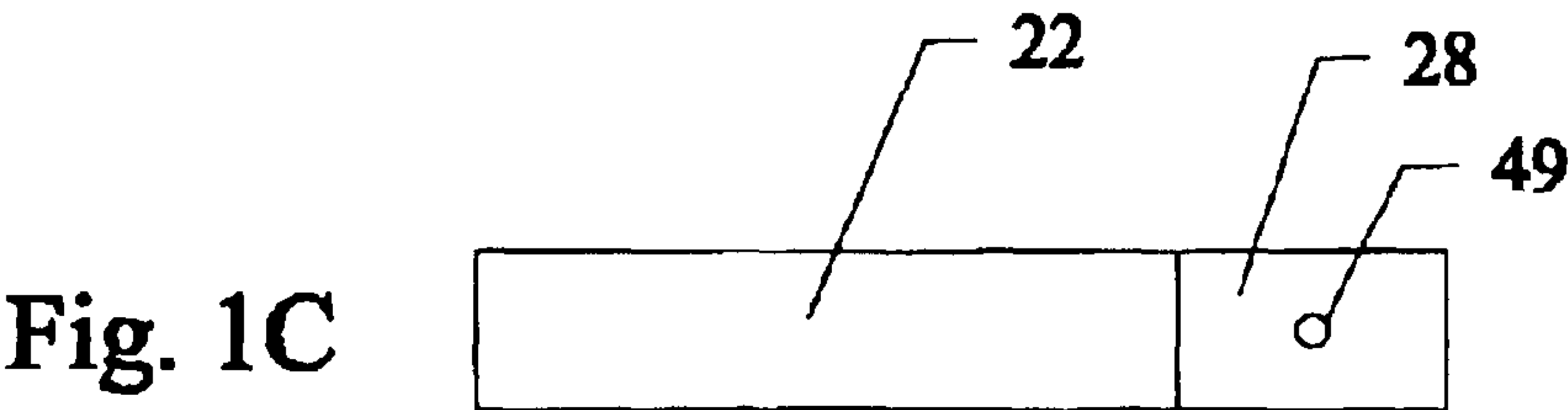
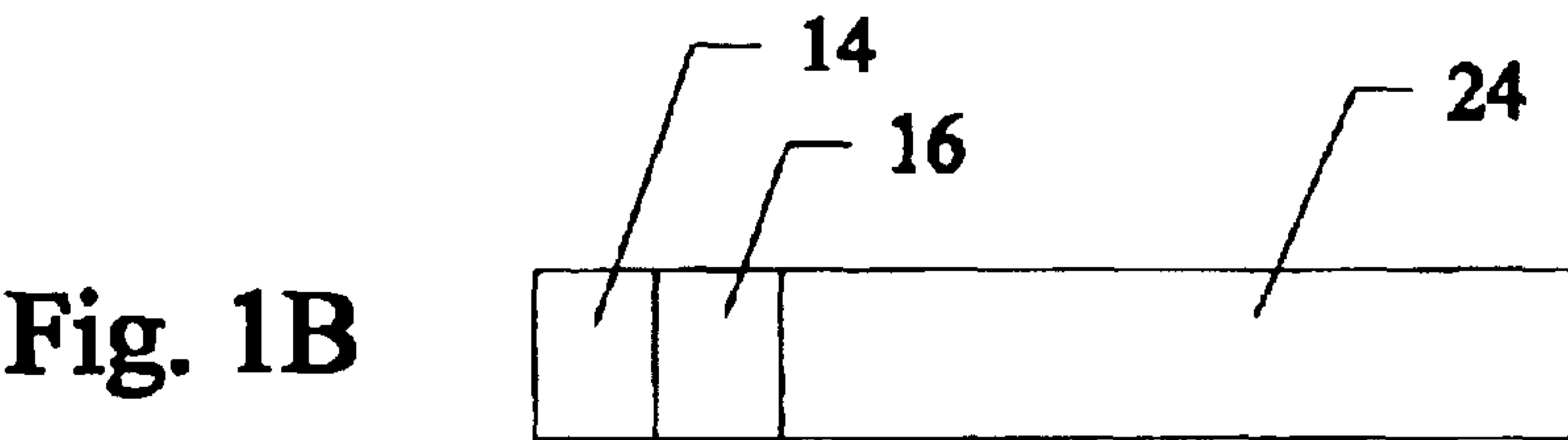
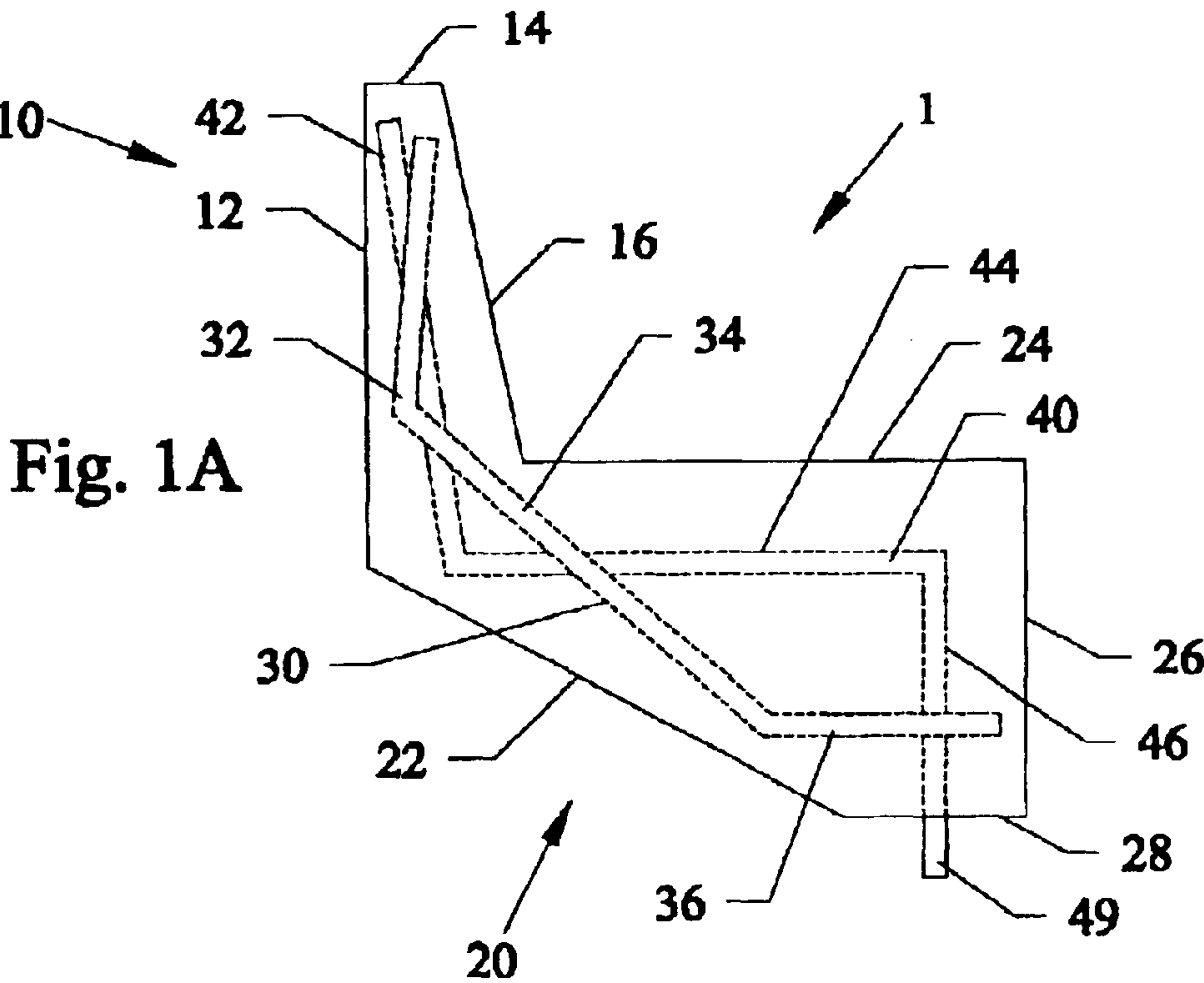


Fig. 2

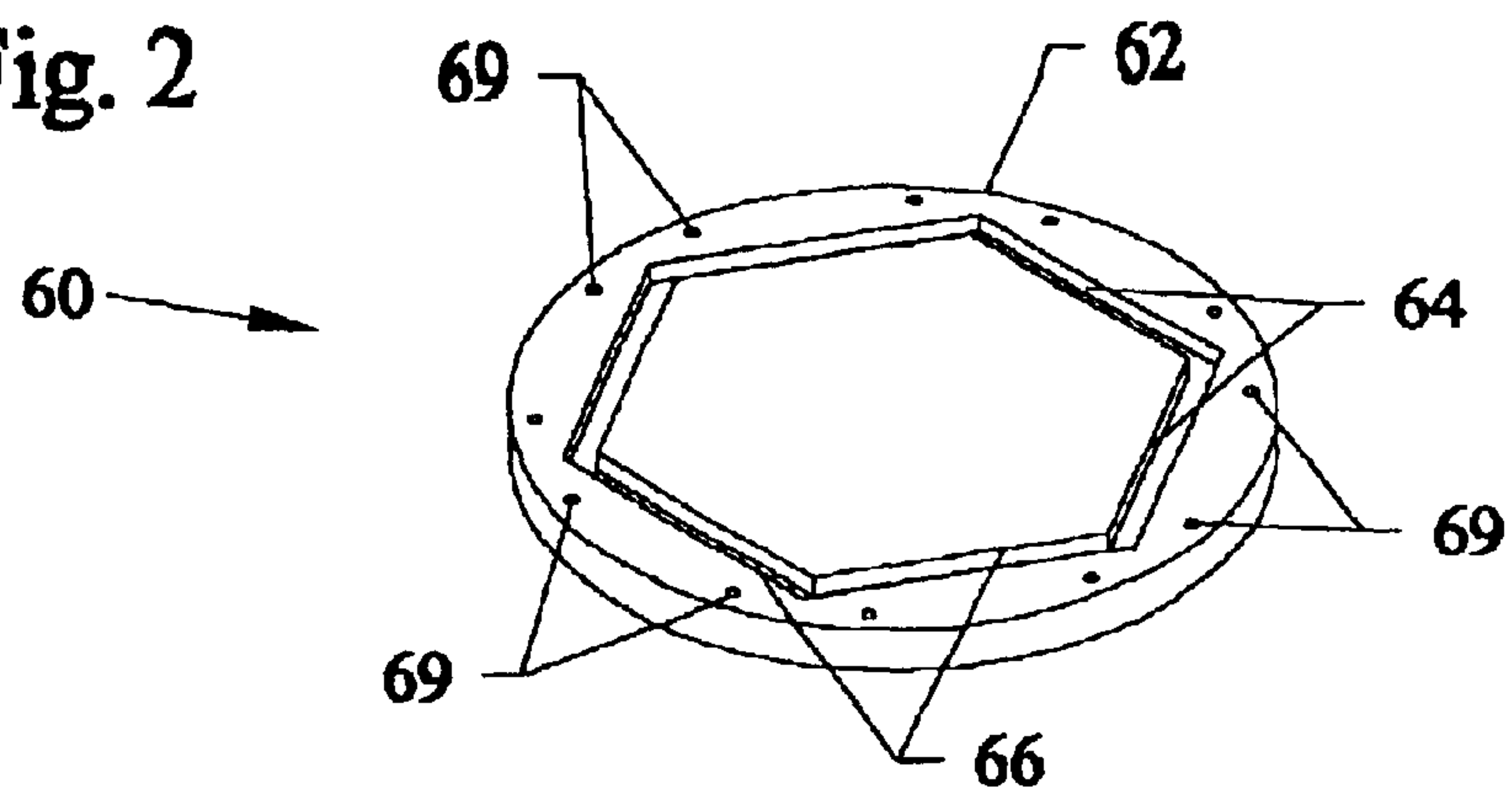


Fig. 3

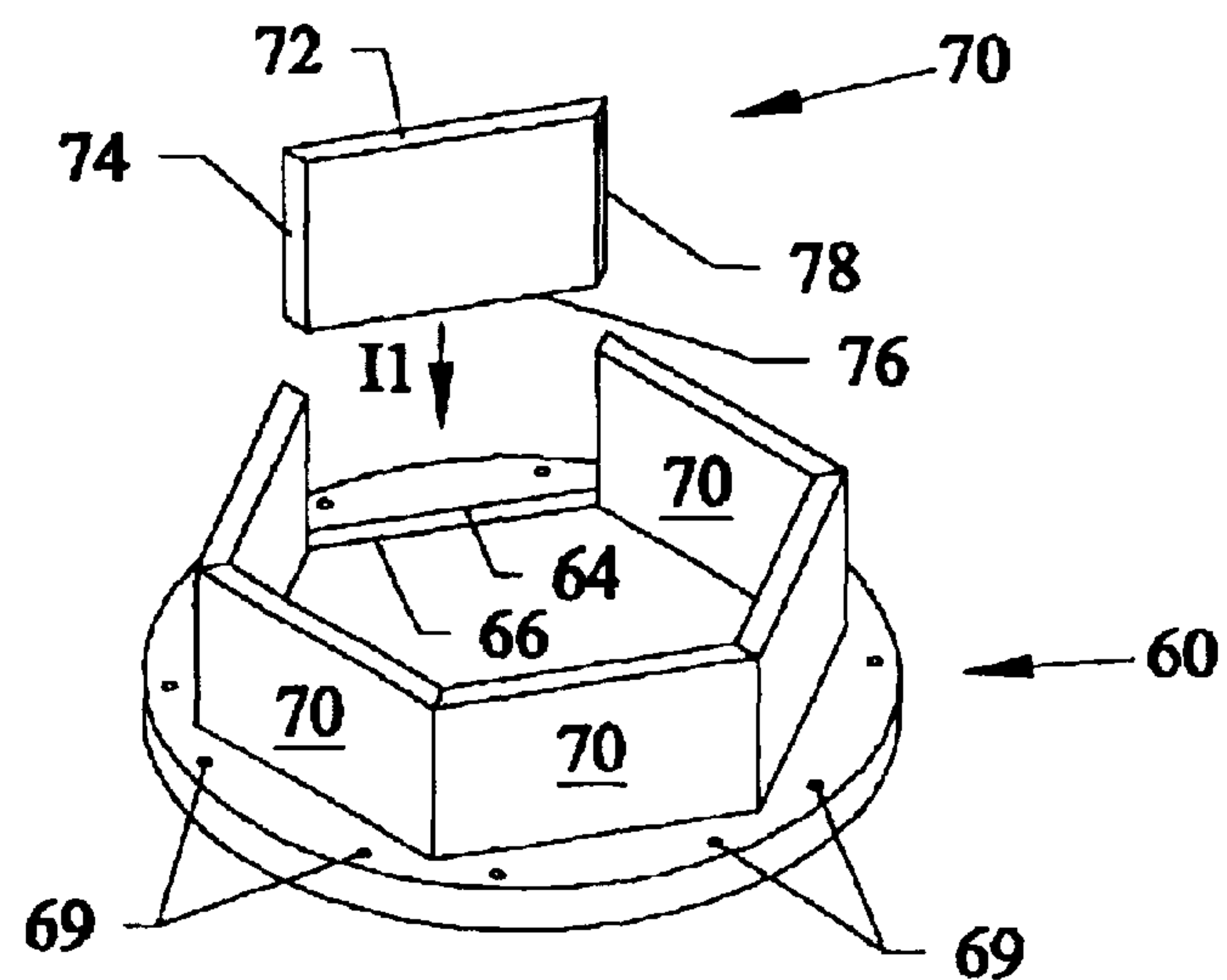


Fig. 4

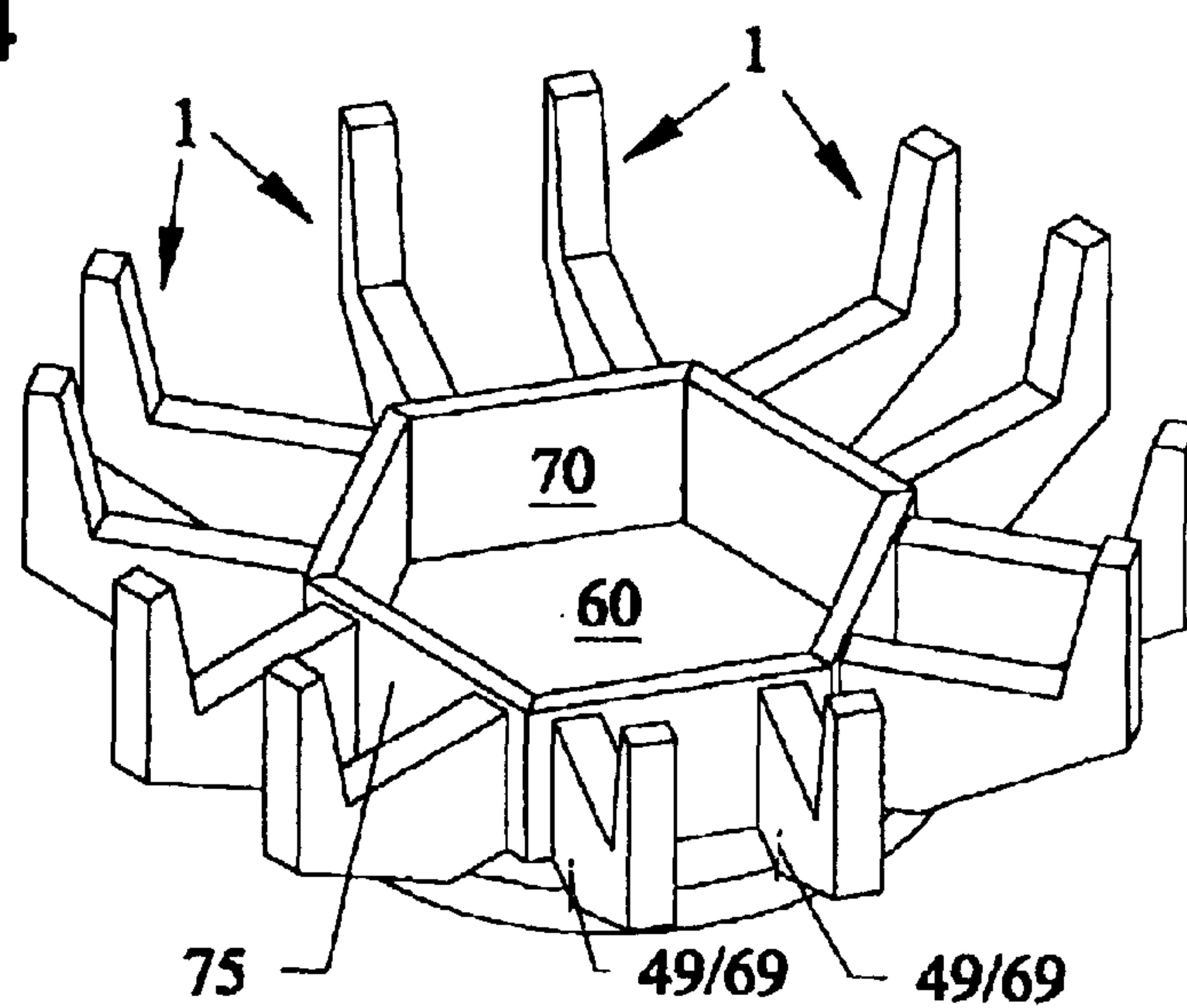


Fig. 5

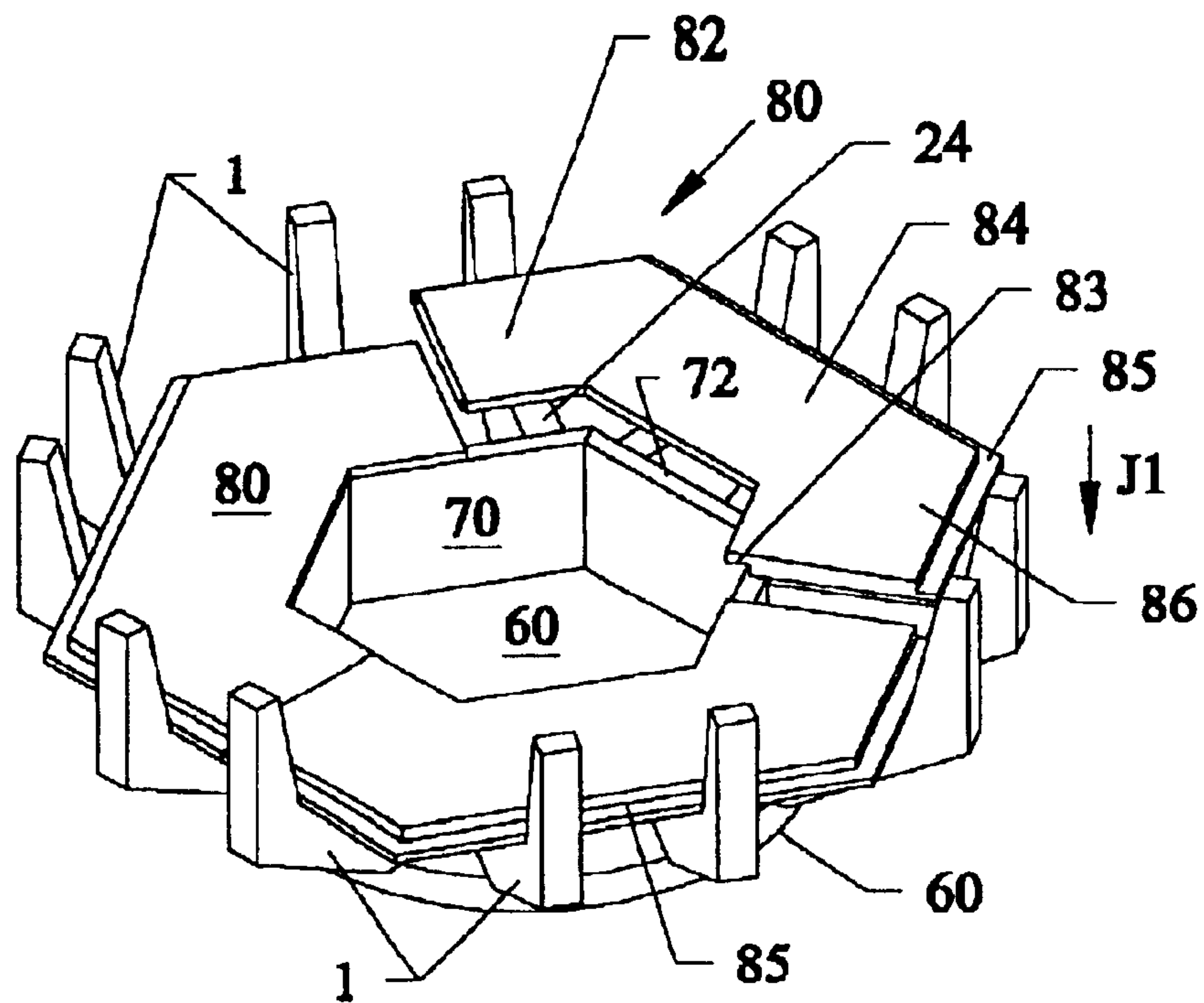


Fig. 6

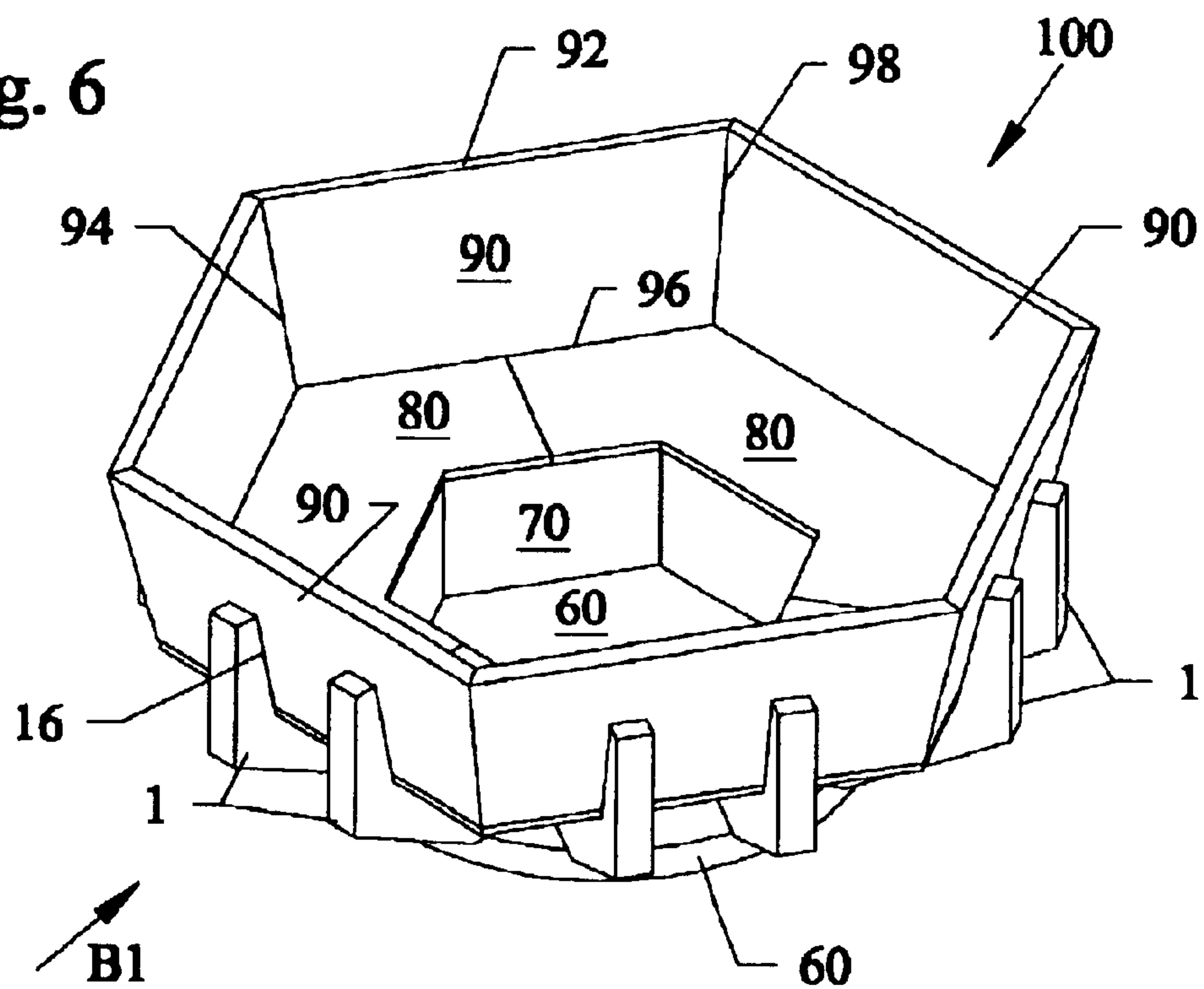




Fig. 7

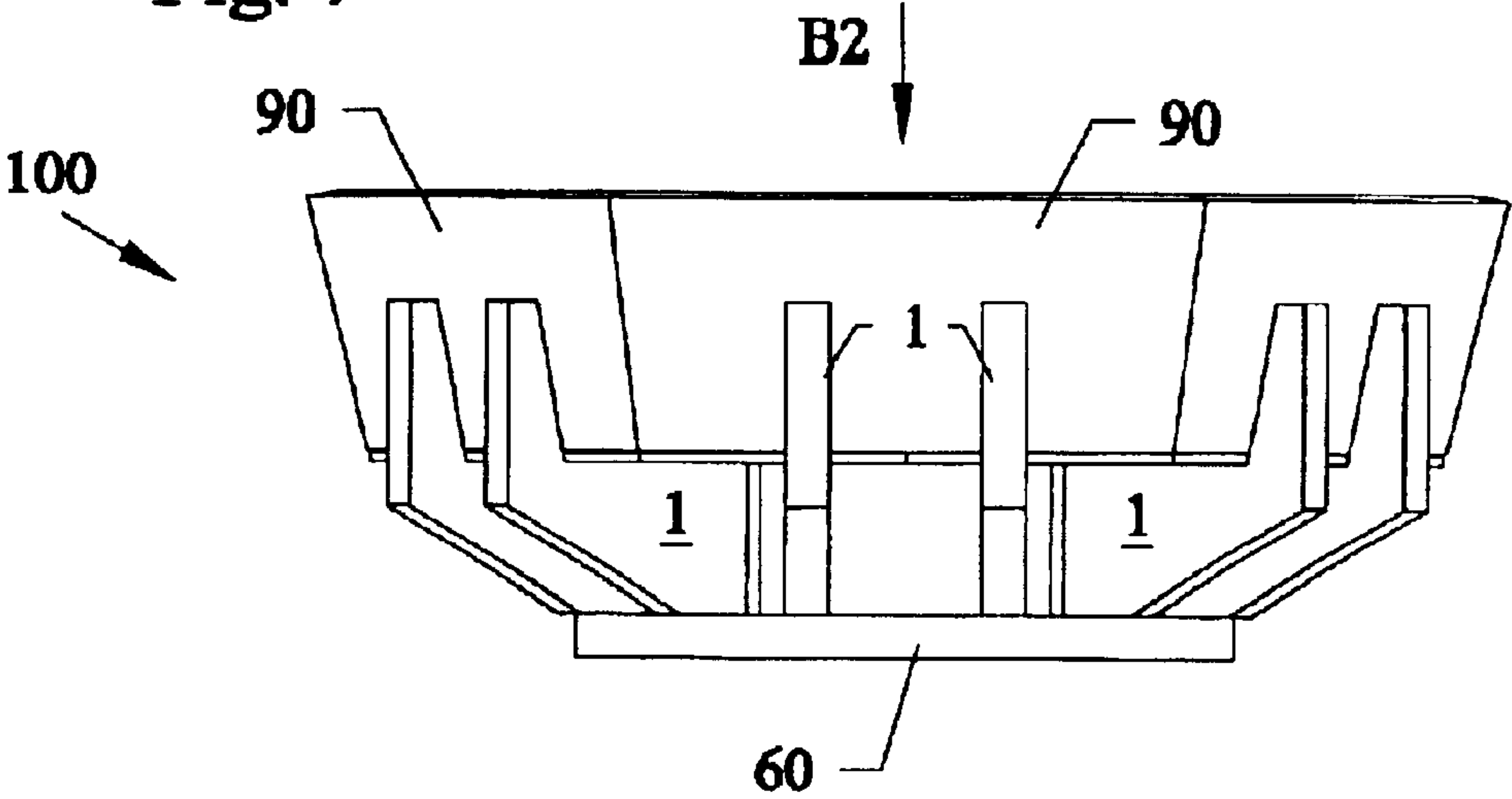


Fig. 8

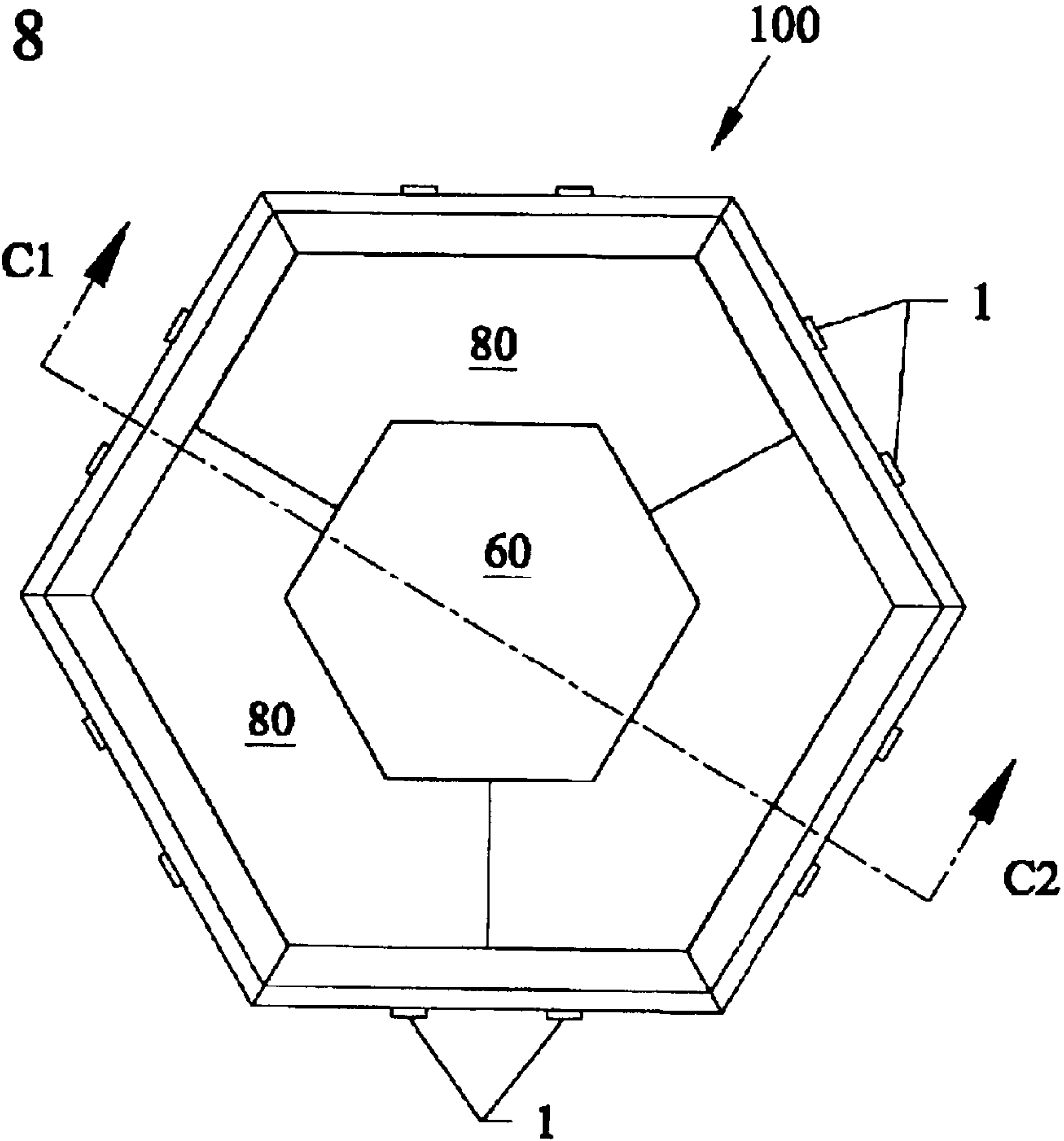
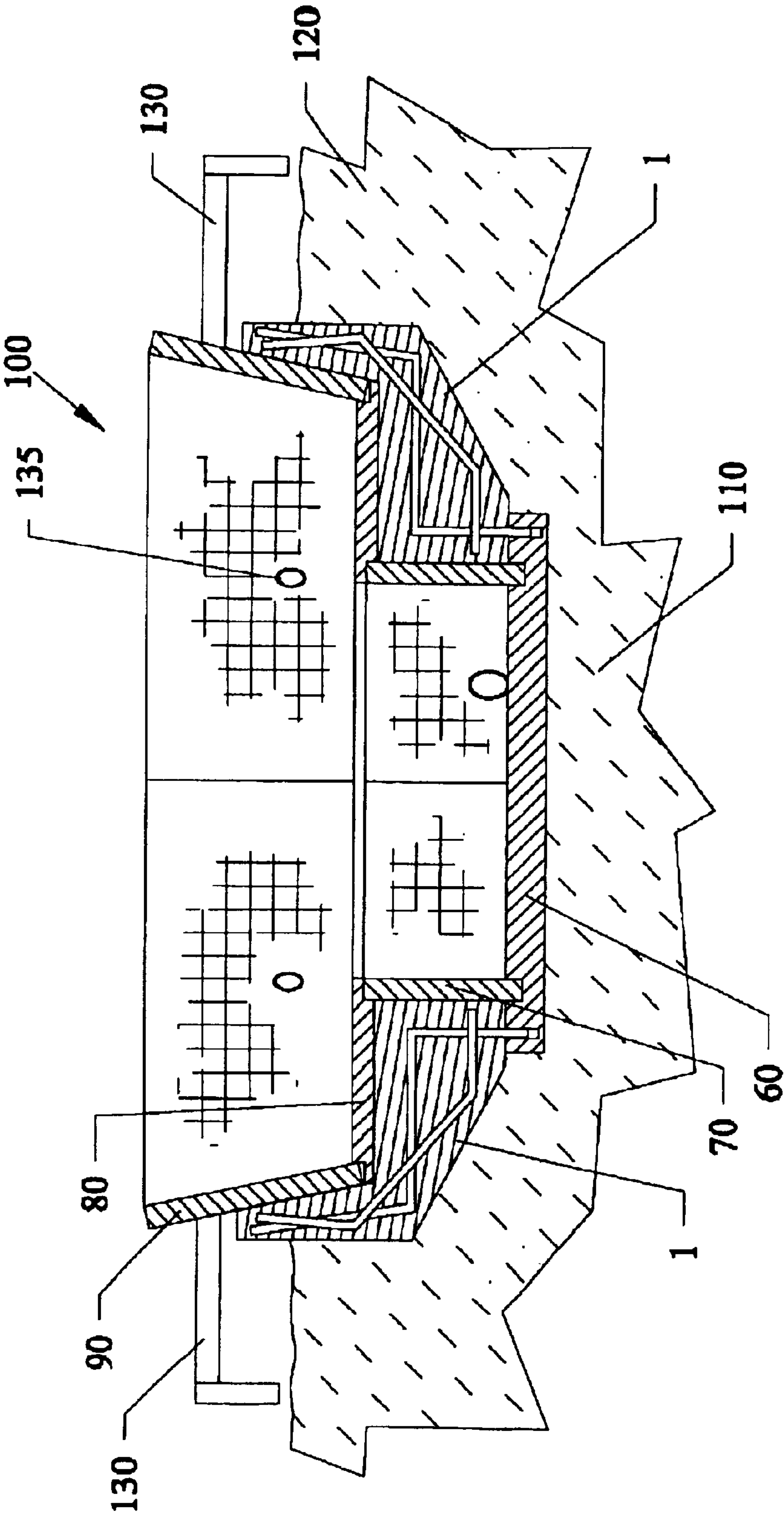


Fig. 9





**MODULAR PRECAST SPA SYSTEM**

This application is a Div of Ser. No. 10/026,409 filed Dec. 19, 2001 now U.S. Pat. No. 6,637,162.

This invention relates to water containment holders such as spas, pools, manmade ponds and fountains, and in particular to methods and apparatus for building and installing the water containment holders from modular components.

**BACKGROUND AND PRIOR ART**

Various methods and construction materials have been used to build pools and spas within the ground. A popular technique for building spas in the ground as required the use of a large elaborate steel type cage such as a large and heavy hexagon cage that is manufactured at remote locations and then transported as a whole piece to remote sites where the spa is to be installed. The large and heavy cages require trucks to be transported. At the installation site, installers assemble the spa by positioning pre-made sections about the cage. Finally, the areas around the cage are backfilled to complete the installation.

In addition to being heavy and difficult to transport, the cages can be damaged during the transportation process and have to be replaced. Also, the size of the cages requires more than worker to move them and more than one worker at the installation site which also adds extra labor expenses to the installation. The size and weight of the large and heavy hexagon cages are also difficult to maneuver at the installation sites, and can also become further damaged if moved at the site. Furthermore, since the metal cages are buried, the cages can be prone to rust and decompose unless rust resistant materials such as galvanized metal and/or coatings are used, which can add further expense and labor to the spa installation. Finally, any variation in the desired overall shape of the spa other than a hexagon shape requires an elaborate and expensive customization expense to the cost of installing the spa.

Various patents have been proposed over the years for assembling and building spas and pools. See for example, U.S. Pat. No. 3,335,430 to Schwarz et al.; U.S. Pat. No. 3,877,085 to Bukaitz et al.; U.S. Pat. No. 4,023,217 to Kessler; U.S. Pat. No. 4,142,337 to Holcomb; U.S. Pat. No. 4,233,694 to Janosko et al.; U.S. Pat. No. 4,473,978 to Wood; U.S. Pat. No. 4,982,457 to Donaton; U.S. Pat. No. 5,325,644 to Cornelius; U.S. Pat. No. 5,615,421 to Watkins et al.; and U.S. Pat. No. 6,226,938 to Hodak. However, none of the patents adequately overcomes the problems with assembling and installing spas as described above.

**SUMMARY OF THE INVENTION**

A primary objective of the invention is to provide a modular system for building and assembling water containment holders such as spas, pools, manmade ponds and fountains.

A secondary objective of the invention is to provide a method and components for building and assembling water containment holders such as spas, pools, manmade ponds and fountains, that does not require plural workers.

A third objective of the invention is to provide a method and components for building and assembling water containment holders such as spas, pools, manmade ponds and fountains, that is inexpensive and easy to assemble.

A fourth objective of the invention is to provide a method and components for building and assembling water containment holders such as spas, pools, manmade ponds and

fountains, that does not require the transportation of large components that can be damaged during transport and installation.

A fifth objective of the invention is to provide a method and components for building and assembling water containment holders such as spas, pools, manmade ponds and fountains, that can be accomplished by a single installer.

A sixth objective of the invention is to provide a method and components for building and assembling water containment holders such as spas, pools, manmade ponds and fountains, without using large and heavy metal cages.

A seventh objective of the invention is to provide a method and components for building and installing water containment holders such as spas, pools, manmade ponds and fountains, that can be versatile to be used for building various shapes such as hexagons, rectangles, ovals, circles, triangles, and the like.

The preferred embodiment is described for using modular components such as novel L-shaped forms with additional modular components for building the water containment holders such as spas, pools, manmade ponds and fountains for both inground and above ground use.

Further objects and advantages of this invention will be apparent from the following detailed description of a presently preferred embodiment which is illustrated schematically in the accompanying drawings.

**BRIEF DESCRIPTION OF THE FIGURES**

FIG. 1A shows a side view of a novel L-form used in constructing a spa.

FIG. 1B shows a top view of the L-form of FIG. 1A along arrow A1.

FIG. 1C shows a bottom view of the L-form of FIG. 1A along arrow A2.

FIG. 2 shows the initial assembly step of providing a foundation base for the spa.

FIG. 3 shows a second step of installing the lower wall sections on the base of FIG. 2.

FIG. 4 shows a third step of installing the L-forms of FIGS 1A-1C on the base of FIG. 3.

FIG. 5 shows a fourth step of installing the seat sections onto the L-forms in FIG. 4.

FIG. 6 shows a fifth step of installing the backrest sections with the L-forms of FIG. 5.

FIG. 7 is a side view of the assembled spa of FIG. 6 along arrow B1.

FIG. 8 is a top view of the assembled spa of FIG. 7 along arrow B2.

FIG. 9 is a cross-sectional view of the assembled spa of FIG. 8 along arrows C1 with backfill around the spa.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

Before explaining the disclosed embodiment of the present invention in detail it is to be understood that the invention is not limited in its application to the details of the particular arrangement shown since the invention is capable of other embodiments. Also, the terminology used herein is for the purpose of description and not of limitation.

FIG. 1A shows a side view of a novel L-form 1 used in constructing an inground water containment holder such as a spa, pool and manmade pond. FIG. 1B shows a top view of the L-form 1 of FIG. 1A along arrow A1. FIG. 1C shows a bottom view of the L-form 1 of FIG. 1A along arrow A2.



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Referring to FIGS. 1A–1C, the L-shaped form **1** can include a vertical leg **10** having a substantially vertical planar back surface **12** having a height of approximately 17 inches, a flat horizontal top end **14** of approximately 3 inches, and a downwardly forward sloping front surface **16**. Form **1** can include a horizontal leg **20** having an inclined rear back surface **22** (having an incline of approximately 45 degrees) being approximately 16.75 inches long, a flat planar horizontal longitudinal top surface **24** being approximately 16.5 inches long, and a vertical planar front surface **26** approximately 12 inches in height, with a lower flat planar tip end **28** approximately 8 inches in length. L-form **1** can have a uniform width of approximately 3.5 inches, and can be entirely formed from a single pre-cast material such as concrete, and the like, and include reinforcement members **30**, **40** therethrough, such as but not limited to rebar, and the like.

One reinforcement member **30** can have an upwardly slightly forward bending upper end portion **32** within the vertical leg **10**, an angled mid portion **34** passing through the portion where vertical leg **10** and horizontal leg **20** meet, and a lower horizontal end portion above the flat tip lower end **28** of horizontal leg **20**. A second reinforcement member **40** can have an upper end portion **42**, and horizontal mid portion **44** and lower extending end portion **46** having a seat shape inside the L-form **1**, which follows the contour of the forward sloping front surface **16** of vertical leg **10**, flat planar horizontal longitudinal top surface **24**, and vertical planar front surface **26** of horizontal leg **20**. Extending beneath lower flat tip end **28** of the horizontal leg **20** can be a downwardly protruding portion **49** of the reinforcement member **40**. Alternatively, the L-shaped form can be pre-molded and shaped with a protruding portion **49** extending downward from the form without having to use any interior reinforcement members, and further sealing material and bonding materials can be used during the assembly which is described later.

FIG. 2 shows the initial assembly step of providing a foundation base **60** for the water containment holder. Foundation base **60** can be disc shaped and be formed from a pre-cast material similar to that of L-form **1** previously described. Foundation base **60** can have a circular exterior surface **62** and an interior cutout pattern **64** that can be shaped like a hexagon. While the circular exterior shape and the hexagon interior shape is shown, both the exterior shape and the interior shape can have different configurations, such as but not limited to circular, oval, rectangular, square, triangular, polygon and the like. Inside the interior hexagon cutout pattern **64** of base **60** can be a lower ledge edge **66**. Arranged about the perimeter of the upper surface of the base **60** can be openings **69** whose relevance will be described later. The foundation base **60** can be positioned over a selected surface where the water containment holder is to be installed such as but not limited to against a ground surface.

FIG. 3 shows a second step of installing lower wall sections **70** onto the base **60** of FIG. 2. Each lower wall section **70** can be formed from a pre-cast material similar to the L-forms **1** and base **60** previously described. Lower wall section **70** can be rectangular shapes having a lower side **76** which can be positioned in the direction of arrow **I1** onto each ledge surface **64** inside the base **60**, and have inwardly angled sides **74**, **78** for allowing each wall section **70** to be placed close against one another one after the other.

FIG. 4 shows a third step of installing the L-forms **1** of FIGS. 1A–1C on the base **60** of FIG. 3. One after another each of the L-forms **1** can be placed about the base **60** by

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inserting the downwardly protruding portion **49** of the reinforcement members **40** in each L-form **1** (shown more clearly in FIG. 1) into the openings **69** about the upper surface perimeter of the base **60**. As shown in FIG. 2, there are twelve openings **60** shown in the base **60** and in FIG. 4, there are twelve L-shaped forms **1** that are held in place by these openings **69** which support the L-shaped forms **1**. Referring to FIGS. 1 and 4, when the L-forms **1** are in place, each vertical planar front surface **26** of each horizontal leg **20** of the L-forms abuts against the exterior surface **75** of each wall section **70**.

FIG. 5 shows a fourth step of installing the seat sections **80** onto the L-forms **1** in FIG. 4. Each seat section **80** can be formed from a pre-cast material such as those previously described. The seat sections can have a C-type shape having upper and lower angled leg sections **82**, **86** about a mid-leg section **84**. The interior facing portion of the seats **80** can include an overhang portion **83** which is sized to fit over the upper side **72** of each lower wall **70**, and the outside edge of each seat **80** can include an indented ledge portion **85** whose relevance will be explained later. Each seat **80** can be placed top of the horizontal planar surface **24** of the horizontal leg **20** of each form **1** in the direction of arrow **J1** one after another until all the seats **80** are in positioned in place. In FIG. 5, three seat portions **80** are shown but more or less seat sections can be used as needed.

FIG. 6 shows a fifth step of installing the backrest sections **90** with the L-forms **1** of FIG. 5. Each backrest section **90** can be formed from a pre-cast material previously described. Each backrest section **90** can be an enlarged version of the lower wall sections **70** and can include rectangular shapes having a lower side **96** which can be positioned onto each ledge surface **85** of seat section **80** (shown in FIG. 5) and leaned against forward sloping front surface **16** of each L-form **1**. Each backrest section **90** can have inwardly angled sides **94**, **98** for allowing each wall section **90** to be placed close against one another, one after the other, similar to the placement of lower wall sections **70**.

FIG. 7 is a side view of the assembled water containment holder **100** of FIG. 6 along arrow **B1**. FIG. 8 is a top view of the assembled water containment holder **100** of FIG. 7 along arrow **B2**. FIG. 9 is a cross-sectional view of the assembled water containment holder **100** of FIG. 8 along arrows **CI** with backfill **120** filled in around the water containment holder **100**. As shown in FIG. 9, base **60** can be initially placed on a ground surface **110** after which the water containment holder **100** such as the spa is assembled followed by the backfill **120**. In the final assembly, water lines **130** can connect to side ports **135** in the spa **100**.

Additionally, all joints where any component meets another component can be separately caulked and/or grouted and/or sealed as needed to form a final waterproof seal and bond between the components. Finally, the spa **100** can be ready to be filled with water and used.

Although the preferred embodiment describes using the novel invention to build inground water containment holders, the invention can be used for above ground applications. Furthermore, the water containment holders can be used in other applications such as but not limited to a novel constructed spa being assembled in a preexisting pool, and the like.

While the preferred embodiment shows building a hexagon shaped spa, the invention can be versatile to build any other shapes, such as but not limited to oval, circular, triangular, rectangular, square, polygon, and the like.

Although the preferred embodiment describes the invention for building spas, the invention methods and compo-



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nents can be used to build other water filled cavities such as but not limited to pools, manmade ponds, and fountains. For example, the Figures can also be described for building these other water containment holders.

Although concrete type pre-cast material has been described, the invention can be practiced with modular components using any natural or manmade materials that can be formed and/or molded, such as but not limited to rocks, wood, plastic, fiberglass, foam, and the like, and composites, and the like.

While the invention has been described, disclosed, illustrated and shown in various terms of certain embodiments or modifications which it has presumed in practice, the scope of the invention is not intended to be, nor should it be deemed to be, limited thereby and such other modifications or embodiments as may be suggested by the teachings herein are particularly reserved especially as they fall within the breadth and scope of the claims here appended.

I claim:

1. A modular building member for supporting water containment holders, comprising:

an L-shaped modular member having a vertical leg and a horizontal leg, the horizontal leg having a front portion with a flat front base portion, and an inclined rear portion with a rear base portion raised above the flat front base portion, the rear base portion is below the vertical leg, and the flat front base portion is located in front of and below the vertical leg; the inclined rear base portion having an approximately 45 degree flat inclined surface between the raised rear base portion and the flat base portion of the horizontal leg, and substantially vertically planar front end surface, the flat inclined surface adapted for allowing ground fill to be easily filled against the surface, and

a reinforcement member in the L-shaped modular member for providing strength to the vertical leg and the horizontal leg; and

a portion of the reinforcement member extending below the flat front base portion of the horizontal leg for supporting the building member in an upright position, wherein the L-shaped modular member is used as an undersupport for building a water containment holder.

2. The building member of claim 1, wherein the L-shaped member is: a single pre cast member.

3. The building member of claim 1, wherein the reinforcement member includes: a rebar.

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4. The building member of claim 1, wherein the vertical leg includes: a substantially vertical back surface, and a downwardly expanding slope front surface.

5. The building member of claim 1, wherein the vertical leg and the horizontal leg together have a combined height, and the vertical leg and the horizontal leg are identical in width, where the combined height of the vertical leg and the horizontal is substantially larger than the width of the vertical leg and the horizontal leg.

6. A modular system for building a water containment holder, comprising:

a plurality of L-shaped modular members, each having a vertical leg and a horizontal leg, each horizontal leg having a front portion with a flat front base portion, and a rear portion with a rear base portion raised above the flat front base portion, the rear base portion is below the vertical leg, and the flat front base portion is located in front of and below the vertical leg, wherein the support member extends below the flat front base portion, each horizontal leg having an approximately 45 degree flat inclined surface between the raised rear base portion and the flat base portion of the horizontal leg, and a substantially vertically planar front end surface, the flat inclined surface adapted for allowing around fill to be easily filled in against the surface;

support members extending below a front portion of each horizontal leg of the L-shaped modular members; and

a base member having a plurality of openings arranged about a perimeter, the openings for receiving the support members therein, wherein the L-shaped modular members and the base member together are used as an undersupport for the water containment holder.

7. The modular system of claim 6, wherein each of the vertical legs includes:

a substantially vertical back surface, and a downwardly expanding sloped front surface.

8. The modular system of claim 6, wherein each vertical leg and each horizontal leg together have a combined height, and each vertical leg and each horizontal legs are identical in width, where the combined height, and each vertical leg and each horizontal legs are identical in width, where the combined height is substantially larger than the width.

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